

PATENT APPLICATION  
2771-272 CON

The claims 2-4, 12-14, 24-27, 53 and 57-62 pending in the application are set out in the following Section I (Pending Claims) hereof. No amendments have been made.

Remarks addressing the issues raised in the June 18, 2003 Office Action are set out in Section II (Remarks) hereof.

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The claims 2-4, 12-14, 24-27, 53 and 57-62 pending in the application are set out below. No amendments are being made.

1. (previously canceled)
2. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of  $\text{XeF}_2$ .
3. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of at least one dry etching agent selected from the group consisting of  $\text{SiF}_4$ , and  $\text{Si}_2\text{F}_6$ .
4. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of at least one dry etching agent selected from the group consisting of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals.
- 5-11 (previously canceled)
12. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals and the dry etching composition is generated by reaction of  $\text{XeF}_2$  with silicon.
13. (previously amended) The method according to claim 57, wherein the dry etching composition consists essentially of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals and the dry etching composition is generated by passing  $\text{SiF}_4$  through an energetic dissociation source.
14. (previously amended) The method according to claim 13, wherein the energetic dissociation source is selected from the group consisting of a plasma source, an ion source, an ultra violet source and a laser source.
- 15-23 (previously canceled)

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24. (previously amended) A method for removing from a microelectronic device structure a noble metal residue, the method comprising contacting the microelectronic device structure with a dry etching agent consisting essentially of (i) a gas-phase reactive halide composition and (ii) optionally, an agent for enhancing volatility of metal fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition (i), to remove the residue, wherein the noble metal residue comprises iridium, and the gas-phase reactive halide composition comprises  $\text{XeF}_2$  and at least one halide species selected from the group consisting of  $\text{SF}_6$ ,  $\text{SiF}_4$ ,  $\text{Si}_2\text{F}_6$ ,  $\text{SiF}_2$  radicals and  $\text{SiF}_3$  radicals, and wherein the microelectronic device structure is further contacted with a cleaning enhancement agent.
25. (previously amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of Lewis-base and electron back-bonding species.
26. (previously amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines.
27. (previously amended) The method according to claim 24 wherein the cleaning enhancement agent comprises an agent for enhancing volatility of iridium fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition.
- 28-52 (previously cancelled)
53. (previously added) A method for removing a noble metal residue comprising iridium, from a microelectronic device structure disposed in a chamber, the method comprising evacuating the chamber, filling the chamber with a cleaning gas comprising  $\text{XeF}_2$  and one or more radicals selected from the group consisting of  $\text{SiF}_2$  and  $\text{SiF}_3$ , and retaining the cleaning gas in the chamber to react with the residue, to effect the removal of the noble metal residue from the microelectronic device structure.
- 54-56 (previously cancelled)

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57. (previously amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a dry etching composition consisting essentially of (i) at least one dry etching agent selected from the group consisting of  $\text{XeF}_2$ ,  $\text{SiF}_4$ ,  $\text{Si}_2\text{F}_6$ ,  $\text{SiF}_2$  radicals, and  $\text{SiF}_3$  radicals, and (ii) optionally, carbon monoxide.
58. (previously added) A method for removing from a microelectronic device structure, a noble metal residue comprising iridium said method comprising, contacting the microelectronic device structure with a gas-phase reactive halide composition comprising  $\text{XeF}_2$  and at least one cleaning enhancement agent selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines, to form at least one iridium halide species.
59. (previously added) The method according to claim 57, wherein said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.
60. (previously amended) The method according to claim 57, wherein said dry etching composition consists essentially of (i) said at least one dry etching agent and (ii) carbon monoxide.
61. (previously added) A method of etching iridium, comprising contacting said iridium with  $\text{XeF}_2$ .
62. (previously added) A method for removing a noble metal residue from a microelectronic device structure, wherein said noble metal residue is selected from the group consisting of palladium, iridium and rhodium, said method comprising contacting the microelectronic device structure with a composition consisting essentially of: (1)  $\text{SF}_6$  and optionally (2) carbon monoxide.